Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for controlling an air fuel ratio in a gas furnace in which ~~drives~~ a fan motor ~~with~~ is driven by a specified voltage, ~~measures each~~ cycle ~~time~~ times of pulse signals generated during revolution of the fan motor are measured, revolutions per minute ~~detect an RPM (Revolution Per Minute)~~ of the fan motor ~~according to~~ are detected based on the measured cycle ~~time~~ times, and ~~controls~~ an opening of a gas valve is controlled based on an average voltage of a ~~PWM (~~ pulse width modulation [[ )]] signal applied ~~from~~ by a controller, the method comprising ~~the steps of~~:

detecting ~~data of~~ variation in a calorific ~~value according to~~ rate associated with a heat output requirement of the furnace based on variation in a ~~PWM~~ pulse width modulation count value, and ~~data of~~ detecting a variation in an air ~~quantity according to~~ flow rate based on variation in revolutions per minute of the fan motor ~~RPM~~;

detecting ~~data of~~ variation in the ~~PWM~~ pulse width modulation signal ~~count value for gas valve control according to~~ based on the variation in the revolutions per minute of the fan motor, ~~PWM by using~~ the variation in calorific ~~value variation data~~ rate, and the variation in air ~~quantity variation data~~ flow rate, and deriving a relational expression between the

4

revolutions per minute of the fan motor ~~RPM~~ and the ~~PWM~~ pulse width modulation count value ~~by using~~ based on the ~~PWM~~ variation in the pulse width modulation signal ~~count value variation data~~; and

applying the detected ~~RPM~~ revolutions per minute of the fan motor to the relational expression until a calorific ~~value~~ rate associated with a heat output requirement of the furnace reaches a level preset in a temperature control mode ~~selected~~ by a user ~~at a time of~~ when performing a burning operation of the gas furnace, and accordingly controlling the gas valve with the ~~PWM~~ pulse width modulation count value.

2-3.   (Canceled)

4.   (New) A method for controlling an air fuel ratio in a gas furnace, comprising:

determining a rotational speed of a fan motor of the furnace;

detecting a variation in a heat output rate of the furnace based on a pulse width modulation count value;

detecting a variation in air flow rate based on a variation in the rotational speed of the fan motor;

detecting a variation in the pulse width modulation count value based on the variation in the rotational speed of the fan motor;

determining a relational expression between the rotational speed of the fan motor and the pulse width modulation count value based on the variation in the pulse width modulation count value;

applying the detected rotational speed of the fan motor to the relational expression until the heat output rate reaches a preset heat output rate; and

controlling operation of a gas valve of the furnace based on the pulse width modulation count value.

5.　(New)　The method of claim 4, wherein the fan motor is driven by a predetermined voltage.

6.　(New)　The method of claim 5, wherein the rotational speed of the fan motor is based on a cycle time associated with a plurality of pulse signals generated during revolution of the fan motor.

7.　(New)　The method of claim 4, wherein the fan motor is driven by a predetermined pulse signal comprising a plurality of cycles of pulses, and a corresponding number of revolutions of the fan motor based on the plurality of cycles of pulses.

8.   (New) The method of claim 7, wherein determining a rotational speed of the fan

further comprises measuring a cycle time for each of the plurality of cycles of pulses and

calculating a number of revolutions per minute of the fan motor.

9.   (New) The method of claim 7, wherein the number of revolutions of the fan

motor per cycle is selected based on a number of cycles counted by a counter.

10.   (New) The method of claim 4, wherein the fan motor is driven by at least one

predetermined pulse signal.

11.   (New) The method of claim 10, further comprising counting each cycle of the

at least one pulse signal, and determining a corresponding count value.

12.   (New) The method of claim 11, wherein determining a rotational speed of the

fan motor further comprises detecting a number of revolutions per minute of the fan motor

based on the count value and a linear function associated with the rotational speed of the fan.